



University of Massachusetts
Department of Food Science Newsletter
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The Amazing Success of UMass Food Science Students

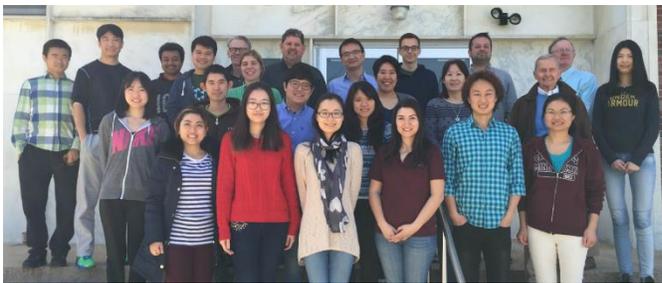
This month's newsletter is dedicated to highlighting UMass student's most recent accomplishments. While we have had celebrated many student success stories, these past 6 months in particular have been tremendous.

Joshua Gukowsky, UMass Amherst Food Science Student, Wins International Science Competition



Food science student, **Joshua Gukowsky** recently won the Alltech Global Young Scientist competition in the undergraduate category. According to Alltech, the Global Young Scientist is the world's largest agriscience competition and this year attracted 154 applications from around the world. Applicants were narrowed down to seven regional finalists who presented their papers on innovative agriscience ideas to a panel of international judges at the Alltech Ideas Conference in Lexington, Ky.

His winning proposal outlines a new method for detecting antibiotics in food samples using gold nanoparticles. Gukowsky, an advisee of Professor **Lili He**, will receive full funding toward his doctoral degree and \$5,000. (Modified from Janet Lathrop article in "Inside UMass")



UMass Receives Phi Tau Sigma Chapter of the Year Award

The UMass Chapter of Phi Tau Sigma was reactivated in fall 2014 thanks to the leadership of **Xiaoqiong Cao** (Treasurer), **Cansu Gumas** (Vice President) and **Dr.**

Lili He (President and Advisor). In the three years since reactivation, the Chapter recruited 9 professional members and 23 student members. In the past year, student members organized 10 Phi Tau Sigma events including student seminars and invited talks from academia and industry. These seminars gave students and faculty new insights to the world of food science. Due to the

extraordinary success of the program as well as the impressive new member recruitment, the Chapter received a \$1000 prize for Chapter of the Year.

UMass Reaches IFT College Bowl Final



For the first time in memory, the UMass College Bowl Team made the final round at IFT. The team defeated McGill and Cornell twice in the regional competition. Although the team did not win the national competition, it was a great experience for the team as well as exposure for the Department. Many thanks to IFT, NEIFT and the UMass Graduate School for supplementing the team's travel budget.

UMass Student Win Big Again at American Oil Chemist Society Meeting



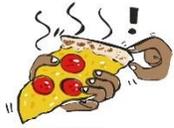
Ruojie Zhang won the 2018 Thomas H. Smouse Memorial Fellowship. Named after a noted industrial researcher in the flavor chemistry of fats and oils and a former president of the society, the award consists of a pair of inscribed bookends, a \$10,000 stipend, and \$5,000 in research and travel funds. Ruojie, a student of **Julian McClements**, was the third UMass student to receive the top AOCs scholarship in the last 6 years. Zhang also won the 2017 Hans Kaunitz Award, which recognizes a student doing research in the sciences relating to fats, oils and detergent technology.

Zipei Zhang won the Honored Student Award, sponsored by the AOCs Foundation and designed to encourage graduate student research in lipid chemistry and greater interest in the society. He also won the Peter and Clare G. Kalustian Award and as well as a \$1,000 scholarship. The award recognized Zhang's pioneering work in developing biopolymer microgels to control the gastrointestinal fate of bioactive components. **McClements** notes that as part of this Ph.D., Zhang has already published more than 25 scientific research articles.

UMass Students Take First and Third Prize in the IFT Video Competition

Studies show that children who learn about careers in science, technology, engineering, and mathematics (STEM) fields early in their education tend to pursue these fields as their profession.

Videos are an effective tool in today's classroom to exposing their student's to different career paths and enhance an educator's repertoire by engaging students visually to show them how food science and technology work. The Journal of Food Science Education (JFSE) is developing a rich video library of foundational food science resources for K-12 STEM educators.



To develop this library, IFT held a competition and this year first place went to “[Food Science Investigation - The Mystery of The Flabby Pizza](https://www.youtube.com/watch?v=yZ5O0MCHHBY)” by **Amadeus Driando Ahnan**, a UMass P.h.D student advised by **Hang Xiao**. Third place went to **Michael Freund**, an M.S. student advised by **Eric Decker**, for his video “[All That and a Bag of Chips](http://www.ift.org/knowledge-center/learn-about-food-science/food-science-in-action.aspx). (http://www.ift.org/knowledge-center/learn-about-food-science/food-science-in-action.aspx)”

Thanh Vu Named Global Top Talent by UNLEASH

UNLEASH is a global innovation lab that brings together people from all over the world to transform 1,000 personal insights into hundreds of ideas and build lasting global networks around sustainable development goals. **Thanh Vu** (advisee of **Eric Decker**) was chosen as one of 1,000 global top talents to participate in a 9-day meeting of co-creation and problem-solving along with cutting-edge companies, NGOs, government agencies, investors, and foundations. UNLEASH supports winning ideas from the conference with opportunities to attract financial backing for commercialization and/or implementation in both profit and non-profit institutions.

Judges Accept All Four Student Flavors for UMass Amherst Seasonal Ice Cream Competition

All four teams in the annual UMass Ice Cream Competition will have their ice cream flavors produced by Hadley-based Maple Valley Creamery. “The field of frozen treats was too strong for a single winner to emerge from the pack,” said Bruce Jenks of Maple Valley Creamery. Judges were impressed by all how tasty and production ready all four flavors were. Flavors included, chocolate hazelnut fudge swirl, lavender liqueur with dark chocolate flakes, lemon-raspberry swirl and root beer float. Two flavors will be produced for public distribution and two for sale only at the creamery's Mill Valley Road farm store, their Route 9 scoop shop in Hadley and in campus eateries.

This was the third year that local chefs and guest judges sampled newly created flavors developed by teams of senior food science majors. 30 students in four teams developed the ice cream for their senior capstone project in Professor **Maria Corradini's** food processing class. Their creations must stay under a price-per-pint cost limit while maximizing taste, aroma and texture. The students also research food allergens, manufacturing safety and natural ingredient requirements.

Corradini notes that seniors taking part in the capstone project learn core principles of food science such as the microbiology and chemistry of food, processing, market analysis, value to consumer, shelf stability, regulations, health and nutrition considerations. Students are forced to

strike a balance between food safety, affordability, quality, batch consistency, and sensory testing. She added that the experience is extraordinarily helpful preparing students as they enter food science research and industry product development careers.

Other contributors: food science alumni **Ameena Cohen** and **Gabe Katzentein**, both product developers at ingredient manufacturer Star Kay White, Inc., gave a presentation on flavor trends. Star Kay White Vice President and alumnus **Steve Platt helped** supply ingredients. (Modified from article by Janet Lathrop)

Other Student Awards



Northeast IFT continues to provide amazing support for our students and this year's recipients were **Weicang Wang** (advisor **Zhang**) (left), **Amadeus Driando Ahnan**, (advisor **Xiao**) **Thanh Vu** (advisor **Decker**), **Ruojie Zhang** (advisor **McClements**) and **Tianxi Yang**.

Zipei Zhang (advisor **McClements**), **Weicang Wang** (advisor **Zhang**), **Ezgi Ozcan** (advisor **Sela**) and Amadeus Driando Ahnan (advisor Xiao) received IFT Feeding Tomorrow Scholarships and Cally Toong (advisor Corradini) received the General Mills Scholarship and Internship.

Thanh Vu (advisor **Decker**) won the AOSC's Lipid Oxidation and Quality Division Poster Competition for her paper entitled "*Influence of Food Additives and pH on the Oxidative Stability of Crackers.*"

Haoxin Chen's (advisor **He**) abstract was selected as one of the 5 best abstracts for the North American Chemical Residue Workshop.

Weicang Wang (advisor **Zhang**) received the American Society for Pharmacology and Experimental Therapeutics Graduate Student Travel Award and the **Micha Peleg International Travel Award**.

David Sela's students **Ezgi Ozcan**, **Xiaomeng You**, and **Korin Albert** each received travel grants to attend the FASEB SRC meeting on Breast Milk bioactives in Lisbon, Portugal.

Cansu Gumus (advisor **McClements**) won the Phi Tau Sigma Achievement Award and Tianxi Yang won Phi Tau Sigma Founders' Award.

Decker Receives IFT Babcock-Hart Award



Eric Decker received the 2017 Babcock Hart Award which honors an IFT member who has attained distinction by contributions to food technology which result in improved public health through nutrition or more nutritious food. He was recognized for his pioneering scientific research on lipids and oxidation as well as his outstanding work in developing new technologies that stabilize highly unstable nutritionally beneficial lipids, such as omega-3 fatty acids and carotenoids, thus enhancing the nutritive value of foods containing unsaturated lipids. Eric (right) is pictured with IFT President and former UMass Food Science Post Doc, **John Coupland**.

Faculty News

Amanda Kinchla recently presented her work at the Center for Produce Safety and at the International Association of Food Protection conference. She has co-lead 4 Preventive Controls for Human Foods courses throughout New England (reaching over 115 participants) and hosted 1-day Food Science: From Farm-to-Fork program for the 4H Summer of Science Camp.

Maria Corradini received funding from Fundacion UADE to explore the potential uses of data science approaches in food science research. Maria also was invited to give a webinar on Optical Spectroscopic Approaches in Food Science and Engineering by the International Society of Food Engineering and organized a symposium at IFT on the Uses of Optical Luminescent Techniques and Compounds to Enhance Food Quality and Safety.

Eric Decker was elected Secretary of the American Oil Chemist Society. He also gave two talks at AOCS and two at the IFT Annual Meeting.

Lili He has been with Diversified Laboratories and NEC Labs America on technology transfer and did a webinar for Thermo Fisher. Her group was received the Tanner Award for the top cited paper in the Journal of Food Science in 2014.

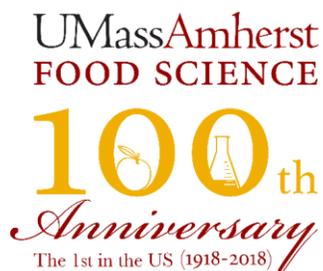
Lynne MacLandsborough in collaboration with **Maria Corradini** is working on a study with EcoPack, Fortune Growers, and Sysco to evaluate the influence packaging type has on the microbial quality of broccoli during distribution from Mexico to the United States. The data collected will be used for modeling microbial growth and quantitative risk assessment to compare the different packaging materials.

Julian McClements recently received funding from the USDA to work on the impact of nanoemulsions on the uptake of pesticides from fruits and vegetables. This work is in collaboration with **Dr. Park** and **Xiao** from the Food Science Department and Dr. Clark from the pesticide analysis laboratory.

David Sela was a key member and the founding chair for the newly established Nutritional Microbiology (microbiome) Research Interest Section of the American Society of Nutrition. David also gave an invited talk on "Human milk interactions with the developing infant microbiome" at an Abbott Conference on Maternal Microbiome & Perinatal Colonization.

Hang Xiao was recognized for his contribution to the Food Chemistry Division as the Chair for 2016-2017 term at the 2017 IFT meeting. **Dr. Hang Xiao** was invited to give research talks at the Conference on Functional Foods in San Diego, the Symposium on Food Nutrition and Health in Dalian, China, the Symposium on Lipid Nutrition and Safety in Wuxi, China, and the Food Innovation Asia Conference in Bangkok, Thailand.

UMass Food Science 100 year Anniversary



2018 is our 100th anniversary and a great opportunity to celebrate being the number one food science program in the nation. We will hold two events, a scientific conference in Bangkok, Thailand to celebrate the tremendous contributions of our Asian colleagues to the Department's success and another in Amherst as part of our traditional Alumni Weekend.

The Thailand conference will be on **January 10-12, 2018** <http://www.umass.edu/foodsci/news/conference-celebrating-100th-anniversary-umass-food-science> and the Alumni Weekend will be **September 28 and 29, 2018**. More details for the Amherst event will be in the winter newsletter. Please hold the date and spread the word to alumni and friends. We invite anyone interested in helping the department plan the 100th Anniversary Alumni Weekend please contact Eric Decker at edecker@foodsci.umass.edu. We look forward to celebrating this incredible achievement with you!

Upcoming Workshops

Better Process Control School, ACIDIFIED PROGRAM, November 15 & 16, 2017
https://www.regonline.com/UMass_BPCS2017

Food Emulsion Short Course, November 30 & December 1, 2017.
<https://umass.irisregistration.com/Home/Site?code=FoodEmulsions>

New Fundraising Campaign

The success of our students has always been a tremendous strength of the Department and has been critical in shaping our future. The students in the Department are continue to be successful, but with our rapidly increasing undergraduate and graduate student populations and decreasing state support for the university, we will be challenged to provide all students with the opportunities students have had in the past. In addition, the changing food industry requires us to continue to expand our curriculum to develop into areas such as marketing, product development, business communications, finance, and entrepreneurship. To meet these goals, we are establishing a new fundraising campaign to expand student opportunities to strengthen their training and augment their experiences. Below is a summary of the goals of the campaign. Please contact me if you would like more information.

“Climate change could potentially slow down or reverse progress toward a world without hunger.”

— Science (Tim Wheeler and Joachim von Braun)

UMass Amherst Food Science: Student Leadership Fund

The food rationing of World War I and the slogans “Food Will Win the War” and “School Garden Army” put a fine point on food as a global concern. Mobilized to work on food production and conservation during this era, the nation’s first food science program, was born. Today, UMass Amherst’s Department of Food Science is ranked among the world’s top-tier food science programs.¹

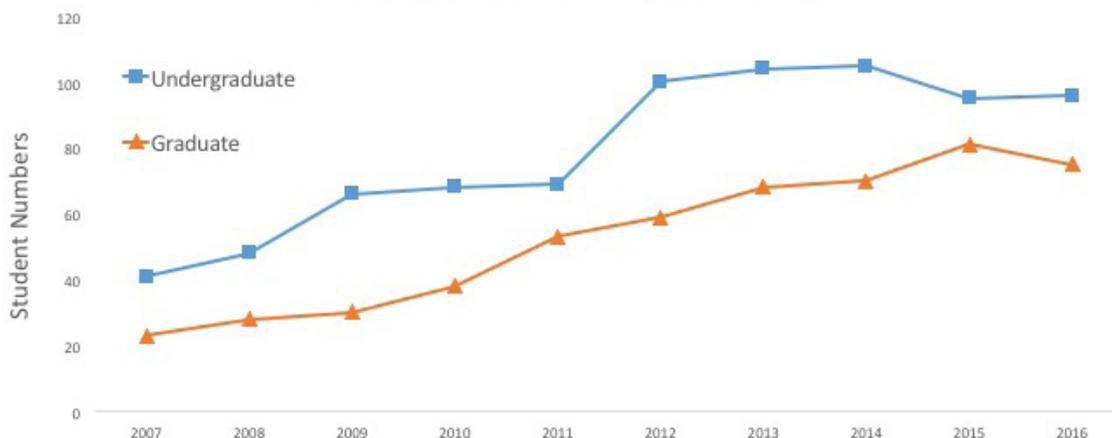
The challenges before food scientists are familiar ones but no less urgent: ensuring that our food is healthy and safe. However, food scientists are also grappling with the effects of climate change, food waste (40 percent of all food produced in the United States is wasted), an obesity epidemic, globalization, and high rates of post-recession food insecurity.

Addressing these challenges calls for new skills and knowledge for our food scientists. Why? A majority of the students we graduate each year will work within the world’s \$1.1 trillion food industry determining what lands on the shelf at our local grocery stores. Others will work for government agencies, academia, or start-ups.

Their preparation demands not only a solid understanding of science, but of everything else that goes into turning our food into healthy, sustainable, and profitable products.

Early research opportunities, participation in competitions, and broad training all drive a highly successful career in food science. With the rapid growth in enrollment, additional funding is critical to bringing these experiences to all food science students. The costs of offering these programs are substantial, and the budgetary pressures are clear. State support for UMass Amherst and per student subsidies have been declining. Currently, state appropriations account for 21 percent of UMass Amherst’s operating budget. Further, UMass Amherst competes with much wealthier private universities for students, scholars, and research dollars. One of food science’s competitors, Cornell University, for example, has more than 18 times the endowment per full-time student than UMass Amherst does. Endowment per student is a measure of an institution’s overall resources because universities draw on their endowments to fund scholarships, equipment and start-up research costs, professorships, as well as other activities that enhance the educational experience.

Food Science Growth (2007-2016)



¹The National Research Council ranks the Department of Food Science the No. 1 food science Ph.D. research program in the U.S.

“The fight against food waste on a global scale is a key priority of civilization and an imperative path we must take if we want to ameliorate the food challenge.”

— Guillaume Garot, French Minister of Agri-food industry

Because we do not want to sacrifice when it comes to the preparation of the next generation of food science leaders, we are building a \$750,000 permanent fund that will sustain student research projects, travel to scientific meetings, campus visits by industry experts, and curricular innovation.

The Problem Solvers of Food's Future:

- *Expanding research opportunities for students*

What if we could replace the unhealthy staples of the American diet with healthier, more sustainable alternatives that people will want to consume? We would curb obesity, cut our carbon footprint, and lower the rates of disease all at the same time. These challenges will require new technologies to make foods more nutritious, rapidly detect food risks, develop natural ingredients for “clean food labels” consisting of only simple, recognizable ingredients, and utilize plant foods to replace less sustainable animal products.

All food science students need early exposure to conducting research on innovative technologies. To promote this goal, we have started a research methods class for undergraduates. This fund will expand these opportunities by covering the costs of laboratory equipment for student experiments, travel to scientific meetings, and participation in research competitions. Through these activities, students develop their communication skills and participate in the pursuit of solutions for major challenges. These endeavors have a multiplier effect. Interaction with high-level leaders in the industry opens the doors to excellent employment opportunities for students and establishes a mutually beneficial, long-term bridge between our program and food companies.

- *Expanding product development and business skills*

Nine percent of the nation's economy is based on value-added food products, not raw commodities. This fact presents a tremendous opportunity to generate businesses and economic growth. That's where food science leaders step in. Beyond the science, they must have a knowledge of finance, operations, product development, supply chains,

regulatory issues, and marketing. This fund will bring industry and academic experts in these areas of food science to campus. Other critical leadership skills such as designing experiments within the pace of industry or explaining scientific work to a wide audience would also be part of this expanded curriculum.

- *Enhancing innovation, problem solving, and entrepreneurship skills*

Understanding how to bring an idea to market is another important and potentially profitable skill set. Five years ago, students developed a coffee-filled donut hole, the “Joenut,” that qualified for the national Food Technologists Student Association competition. With entrepreneurial skills, students could have pursued the commercialization of this concept. New courses will be developed that teach students idea generation, creative problem solving, exploratory consumer insights, innovation processes, and rapid prototyping.

The Next Generation of Food Scientists

In a global society, there's a challenge and an economic opportunity in making products that are the healthiest and safest foods on the planet. The food requirements of consumers have also radically changed in recent years, and graduates must be trained to handle the increasingly complicated nature of food design. While these issues may be complex, it has always been our purview to move the science of food forward. It's difficult to predict the major questions that food science will be confronting 50 years from now. But, we do know that with your support of this fund, we'll have the leaders who are equipped to discover the answers. If you are interested in becoming part of this initiative, please contact Department Head Eric Decker.

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